

What is claimed is:

1. A graded index lens comprising a generally cylindrical glass member having a radially varying index of refraction, the glass member having a length such that the lens has a pitch of less than about 0.23.
2. The graded index lens of claim 1, wherein the glass member exhibits a diameter of less than or equal to about 1 mm.
3. The graded index lens of claim 2, wherein the lens is operative to produce a beam having a mode field diameter between about 350 microns and 450 microns when illuminated with a beam having a mode field diameter of about 10.4 microns.
4. The graded index lens of claim 1, wherein the diameter of the lens is between about 1.5 mm and 2 mm.
5. The graded index lens of claim 4, wherein the lens is operative to produce a beam having a mode field diameter exceeding about 500 microns when illuminated with a beam having a mode field diameter of about 10.4 microns.
6. An optical device including a lens as claimed in claim 3.
7. An optical device including a lens as claimed in claim 5.
8. A method of making a graded index lens comprising obtaining a generally cylindrical glass member having a radially varying index of refraction and forming the glass member having a length such that the lens has a pitch of less than 0.23.
9. The method of claim 8, wherein the diameter of the cylindrical member exhibits a diameter of less than or equal to about 1 mm.
10. The method of claim 9, wherein the lens is operative to produce a beam having a mode field diameter of between about 350 microns and about 450 microns when illuminated with a beam having a mode field diameter of about 10.4 microns.
11. The method of claim 8, wherein the pitch of the lens is between about 0.23 and 0.10.
12. The method of claim 9, wherein the diameter of the cylindrical member is between about 1.5 mm and 2 mm.

13. The method of claim 12, wherein the lens is operative to produce a beam having a mode field diameter exceeding about 500 microns when illuminated with a beam having a mode field diameter of about 10.4 microns.

14. The method of claim 12, wherein the pitch of the lens is between about 0.23 and 0.10.

15. A collimator comprising an optical fiber and a generally cylindrical graded index lens in a spaced apart relationship, wherein the lens has a pitch less than about 0.23.

16. The collimator of claim 15, wherein for a lens having a diameter of about 1.8 mm and a pitch greater than about 0.10 the working distance between the lens and the fiber is less than about 4 mm.

17. The collimator of claim 15, wherein for a lens having a diameter less than about 1 mm and a pitch greater than about 0.10, the working distance between the fiber and the lens is less than about 2.5 mm.

18. The collimator of claim 15, wherein for a lens having a diameter less than about 0.8 mm and a pitch greater than about 0.10, the working distance between the fiber and the lens is less than about 2.0 mm.

19. A graded index lens comprising a generally cylindrical glass member having a radially varying index of refraction, a pitch between about 0.23 and 0.25 and an index gradient less than or equal to about 0.3 mm^{-1} .

20. The graded index lens of claim 19, wherein the diameter of the lens is between about 1.5 and 2.0 mm.